UNITED STATES PATENT AND TRADEMARK OFFICE

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10/621,456	07/18/2003	Tae-Kyun Kim	030681-549	1125

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EXAMINER
AKHAVANNIK, HADI

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
. earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _30 April 2007_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-21_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _10 and 20_ is/are allowed.

6)☒ Claim(s) _1,6,8,9,11,16,18,19 and 21_ is/are rejected.

7)☒ Claim(s) _2-5, 7, 12-15, and 17_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

The examiner acknowledges the amendments to the specification and abstract submitted 4/30/07, located on pages 2-3 of the applicants remarks.

Applicant's arguments filed 4/30/2007 have been fully considered but they are not persuasive.

First the applicant argues that Yang does not teach a background-removing unit which extracts an area having a motion. The examiner disagrees; Yang's system is designed to detect faces throughout an image sequence (see figure 16 item p130, the abstract, and column 9 lines 12-34). Therefore, the system must be able to remove background and detect faces in an environment that has motion and where the location of the face is continuously changing. Also note that column 6 line 43 to column 7 line 33 discloses facial tracking. For these reasons the first argument is not persuasive.

Second the applicant argues that Karmann does not teach using a color difference as well as the brightness difference between the input and background images stored in advance. The examiner agrees that Karmann does not teach using color difference but he does teach using brightness difference. Also, Karmann is used in combination with Yang and Cho and Yang discloses using color difference. Therefore, it is believed that the combination of Yang, Cho, and Karmann do teach all aspects of claims 8-9. Further note that the equation of claim 9 is taught by Karmann in column 9 line 60. For these reasons the second argument is not persuasive.

Claims 2-5, 7, 12-15, and 17 remain objected.

Please see final rejection below.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1.   Claim 1, 6, 11, 16, and 21 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Yang (6700999) in view of Cho et al. (7146025, referred to as "Cho"

herein)

Regarding claim 1, Yang discloses a face detection and tracking system for

detecting and tracking a plurality of faces in real time from an input image, the system

comprising: a background removing unit which extracts an area having a motion by

removing the background image from the input image (column 2 line 65 to column 3 line

63, specifically see column 3 lines 51-63 as it discloses removing background);

a candidate area extracting unit which extracts a candidate area in which a face

is possibly located in the area having a motion, by using a skin color probability map

(P.sub.skin) generated from a face skin color model (column 2 lines 36-64 discloses

creating a skin color map)

and the global probability map (P.sub.global) (column 4 line 40 to column 6 line

26 discloses using secondary probability information, such as face shape and size to

ensure that a face has been selected for tracking);

and a face area tracking unit which tracks a face area according to a directional

kernel indicating a probability that a face is located in a next frame, is based on the skin

color probability map (see abstract and column 9 lines 12-64 as it discloses that this

system is used for face tracking).

Yang does not explicitly disclose using ICA.

Cho discloses a face area determination unit which extracts independent

component analysis (ICA) features from a candidate area and determines whether or

not the candidate area is a face area (see column 3 lines 7-23 as it discloses that ICA is

used to judge a face pattern. The vectors are then sent to a support vector machine).;

It would have been obvious at the time of the invention to one of ordinary skill in

the art to include in Yang an ICA means as taught b Cho. The reason for the

combination is because it makes for a more efficient system that can analyze the quality

of image data by checking the vectors. Further both inventions are from the same field

of endeavor of face recognition.

Regarding clam 6, Cho discloses that the ICA and SVM machine work together

to detect the presence of a face in column 3 lines 6-23.

Regarding claim 11, please see the rejection of claim 1 above as it disclose all

aspects of claim 11.

Regarding claim 16, please see the rejection of claim 6 as it discloses all aspects

of claim 16.

Regarding claim 21, please see the rejection of claim 1 above as it discloses all

aspects of claim 21.

2.   Claim 8-9, and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Yang in view of Cho in further view of Karmann et al. (5034986, referred to as

"Karmann" herein)

Regarding claim 8, Yang discloses a plurality of sub-areas included in the second

area that is not the background, and extracts each sub-area which includes the center

of a sub-area included in the first area that is not the background, as areas that are not

background, to remove the background image from the input image and extract an area

having a motion (please see the rejection of claim 1 and column 3 lines 5-63 as it

discloses extracting each sub-area at the center, which are not background by

submasking the background regions).

Yang does not explicitly disclose that the background removing unit obtains a

first area which is not a background, by using the brightness difference of the input

image and a background image stored in advance, and obtains a second area which is

not the background, by using the color difference of the two images

Karmann discloses this feature in column 3 lines 7-13 and 50-68, and also see

column 10 lines 36-46 as it discloses using a previously stored brightness value to

judge whether a current position is background or foreground.

It would have been obvious at the time of the invention to one of ordinary skill in

the art to include in the combination of Yang and Cho a background selecting means as

taught by Karmann. The reason for the combination is because it makes for a more

robust system that is able to segment background from foreground regions. Further, all

inventions are from the same field of endeavor of target recognition.

Regarding claim 9, Karmann discloses the equation in claim 9 in column 6 line 60.

Regarding claims 18-19, please see the rejection of claims 8-9 above as they disclose all aspects of claims 18-9.

Allowable Subject Matter

3.   Claims 2-5, 7, 12-15, 17 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 10 and 20 are allowed.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hadi Akhavannik whose telephone number is 571-272-8622. The examiner can normally be reached on 10:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh M. Mehta can be reached on (571)272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HA
7/19/07

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